



MSDS – MATERIAL SAFETY DATA SHEET

Portable Fire Extinguisher HAFEX

Model Type P3APP003010

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Permanent pressure fire extinguisher Mod. P3APP003010

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses: extinguisher for fires of class A, B and C as per UL711.

Uses advised against: uses not listed in the “identified uses” section above.

1.3. Details of the supplier of the safety data sheet

umlaut engineering GmbH (FSCM CE579)
Blohmstr. 12
21079 Hamburg, Germany
E-Mail: hafex@umlaut.com
Internet: www.umlaut.com

1.4. Emergency telephone number

GIZ Giftinformationszentrum-Nord (24hours) +49 (0) 551-19240
Languages of the phone service: German, English

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)
Specific target organ toxicity – single exposure 3, H335, H336
Reproductive toxicity, category 2 – H361
Gas under pressure, Compressed gas, H280

2.2. Label elements

Labelling according to UN Mode Regulations



2.3. Item description and other hazards

The product described by this Safety Data Sheet consists of a fire extinguisher for fires of classes A, B and C, containing Halotron® BRX (BTP) as fire extinguishing agent and a propellant gas at pressure of 9 bar (at T = 21 ° C), composed of nitrogen (97% vol.) and helium (3% vol.).

The fire extinguisher is composed of a metal cylinder filled with the extinguishing agent and by of a manual valve for dispensing.

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SECTION 3: Composition/information on ingredients

3.1. Substances

N/A

3.2. Mixtures

This product has been identified as “article” in accordance with the Reg. (CE) 1907/2006 “REACH” and Reg. (CE) 1272/2008 “CLP”.

Fire extinguisher contents:

Substance	Identification number	Quantity	Classification (Reg. CE 1272/2008)
2-bromo-3,3,3-trifluoro-1-propene (BTP)	CAS n. 1514-82-5 EC n. 627-872-0	100% of extinguishing agent	H335 STOT SE 3 H336 STOT SE 3 H361 RT 2
nitrogen, pressurized	CAS n. 7727-37-9 EC n. 231-783-9	97% vol. of propellant	H280 Press. Gas
helium, pressurized	CAS n. 7440-59-7 EC n. 231-168-5	3% vol. of propellant	H280 Press. Gas

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation: in case of inhalation of the extinguishing agent, move the person to fresh air, facilitating breathing. Call a physician if breathing difficulties occur.

Skin contact: In case of contact with the extinguishing agent, remove contaminated clothing and footwear. Consult a physician if irritation occurs.

Eyes contact: in case of contact with the extinguishing agent, flush eyes with cool water and move the person to an uncontaminated area. Contact a physician if irritation occurs.

Swallowing: in case of swallowing of the extinguishing agent, do not induce vomiting. Seek immediately medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Inhalation: overexposure to the extinguishing agent can cause effects on the central nervous system such as dizziness, confusion, lack of physical coordination, drowsiness, anesthesia or loss of consciousness. At concentrations of 1.0% (v/v) or higher overexposure can lead to increased sensitivity of the heart to adrenaline, which can cause irregular beats and possibly ventricular fibrillation or death.

Skin contact: in case of contact with the extinguishing agent, effects of skin irritation or skin corrosion are not known.

Eyes contact: in case of contact with the extinguishing agent, eye irritation effects are not known.

4.3. Indication of any immediate medical attention and special treatment needed

In the event of the appearance of symptoms in the patient, contact a doctor urgently.

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: chemical properties of the extinguishing agent make it a suitable extinguishing media for fires of classes A, B and C. In case of fire or heat sources in proximity, the metal cylinder of the fire extinguisher can be chilled with water.

Non-suitable extinguishing media: the extinguishing agent is not suitable for use against class K (burning fat, oil) fires.

5.2. Special hazards arising from the substance or mixture

The chemical properties of the extinguishing agent make it a suitable extinguishing media for fires of classes A, B and C. Overheating of the metal cylinder of the extinguisher can cause a sudden increase of the propellant gas pressure and the evaporation of the extinguishing agent.

The extinguishing agent vapors are heavier than air and are potentially dangerous if large volumes are enclosed in closed or lower areas.

5.3. Advice for firefighters

The use of water can be useful for lowering the temperature of the metal cylinder of the fire extinguisher in case of intense heat source in proximity.

SECTION 6: Accidental release measure

6.1. Personal precautions, protective equipment and emergency procedures

In case of loss or use of extinguishing agent, don't accede to the area as long as proper ventilation was applied.

6.2. Environmental precautions

Despite the extinguishing agent is volatile and evaporates quickly, prevent the spillage and contamination of surface water, ground water and sewerage.

Do not dispose of empty or damaged fire extinguisher in the environment.

6.3. Methods and material for containment and cleaning up

The extinguishing agent is a volatile material and evaporates quickly. In case of spillage, avoid contact with the surface water, ground water and sewerage.

6.4. Reference to other sections

See sections 8, 13 and 15.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Fire extinguishers, bearing seal and in compliance with current regulations do not allow the unintentional release of the extinguishing agent. Expel the extinguishing agent only in case of emergency, for extinguishing fires of classes A, B and C.

Handle the fire extinguishers with care: danger of falling and impact.

Avoid contact with skin and eyes of the extinguishing agent.

Wash after using and follow good personal hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities

Store fire extinguishers away from excessive heat.

Always place the fire extinguisher properly to avoid injury (e.g. wall anchoring, cages, chains).

7.3. Specific end use(s)

N/A

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

EXTINGUISHING AGENT (2-bromo-3,3,3-trifluoro-1-propene)

DNEL (8 h)	11 ppm
US EPA TSCA (8 h)	1 ppm

8.2. Exposure controls

Eyes/face protection: if possible due to emergency conditions, while using the fire extinguisher, protect your eyes with safety glasses.

Skin protection: if possible due to emergency conditions, while using the fire extinguisher, protect your hands with gloves.

Body protection: if possible due to emergency conditions, while using the fire extinguisher, protect your body with appropriate clothing.

Respiratory protection: if possible due to emergency conditions, while using the fire extinguisher, wear a mask with breathing apparatus.

Thermal danger: exposure to intense heat sources for extended periods, can cause a sudden increase in pressure of the extinguisher interior components.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

a. appearance	metal cylinder
b. odour	EXTINGUISHING AGENT solvent, comparable to ether odour (if not stabilized), acid fruit (if stabilized)
c. olfactory threshold	N/A
d. pH	N/A
e. melting point/freezing point	EXTINGUISHING AGENT: -111.2°C NITROGEN: -210 °C HELIUM: -272 °C
f. initial boiling point and boiling range	EXTINGUISHING AGENT: +34 °C NITROGEN: -195 °C HELIUM: -269 °C
g. flash point	N/A
h. evaporation rate	N/A
i. flammability (solids, gases)	N/A
j. upper/lower flammability or explosive limits	N/A
k. vapour pressure	EXTINGUISHING AGENT: 82.0 kPa a 25 °C
l. vapour density	EXTINGUISHING AGENT: 7,27 g/L a 20 °C
m. relative density	EXTINGUISHING AGENT: 1,65 g/cm ³ a 20 °C
n. solubility	EXTINGUISHING AGENT (in water): 1 g/L a 20 °C
o. partition coefficient octanol/water (K _{ow})	EXTINGUISHING AGENT: P _{ow} = 2.7
p. auto-ignition temperature	EXTINGUISHING AGENT: none; tested up to 400 °C
q. decomposition temperature	EXTINGUISHING AGENT: about 600 °C
r. viscosity	N/A
s. explosive properties	N/A
t. oxidizing properties	N/A

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is stable under the conditions described in Section 7.

10.2. Chemical stability

The product is stable under the conditions described in Section 7.

10.3. Possibility of hazardous reactions

The product is stable under the conditions described in Section 7.

10.4. Conditions to avoid

Direct contact with intense heat sources.

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10.5. Incompatible materials

N/A

10.6. Hazardous decomposition products

From the decomposition of the extinguishing agent may derive hydrogen fluoride (HF), hydrogen bromide (HBr) and carbonyl aldehyde.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

a. acute toxicity:

EXTINGUISHING AGENT (2-bromo-3,3,3-trifluoro-1-propene)

Acute toxicity inhalation test, 5% vol., for 30 minutes (rats): no death and no positive necropsy screening.

Inhalation test of 14 days, 6 hours/day, 5 days/week, 2 weeks (rats): No deaths at six doses between 5,000 and 20,000 ppm. Treatment-related effects were sluggish activity and labored breathing that returned to normal after exposure ended and lower body weights. Pathology showed irritant effects in the upper respiratory tract.

Inhalation test of 90 days, 6 hours/day, 5 days/week, with a 4-week recovery period (rat): no death after six doses of 200 to 3,000 ppm. Treatment-related effects were sluggish activity and labored breathing that returned to normal after exposure ended and lower body weights and food consumption. Pathology showed irritant effects in the upper respiratory tract. Changes in blood chemistry and hematology were noted that appeared to be reversible during the recovery phase. Some treated animals had pale teeth.

b. skin corrosion/skin irritation:

EXTINGUISHING AGENT (2-bromo-3,3,3-trifluoro-1-propene)

No dermatological reaction or skin irritation was observed in laboratory on rabbits.

c. serious eye damage/eye irritation:

EXTINGUISHING AGENT (2-bromo-3,3,3-trifluoro-1-propene)

No eye irritation or reactions in laboratory on rabbits have been noticed.

d. respiratory or skin sensitization:

no available data

e. germ cell mutagenicity:

EXTINGUISHING AGENT (2-bromo-3,3,3-trifluoro-1-propene)

AMES, chromosomal aberration in human lymphocytes, of lymphoma in mice in vitro tests: the tests do not indicate mutagenic response.

f. cancerogenicity:

no available data

g. reproductive toxicity:

EXTINGUISHING AGENT (2-bromo-3,3,3-trifluoro-1-propene)

Reproductive toxicity, inhalation test, 6 h/day, 7 days/week, for up to 8 weeks (rats): in two of reproductive screening test, male and female rats were exposed daily for two weeks before mating, during mating, during gestation and lactation until the tenth day. They were administered six doses of 50 to 3,000 ppm. The offspring showed no obvious defects. The effects of repeated exposure on

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the reproductive performance and growth were tested in male and female rats at concentrations of 175 ppm and higher. There is not clear evidence of reproductive/development effects in the absence of other non-specific consequences and there is interspecies and mechanistic information that raises doubt about human relevancy.

h. specific target organ toxicity (STOT) – single exposure:

EXTINGUISHING AGENT (2-bromo-3,3,3-trifluoro-1-propene)

Dose no observable adverse effect level (NOAEL) cardiotoxic, based on inhalation testing dogs with epinephrine: 0.5% vol.

Minimum dose with observable adverse effect level (LOAEL) cardiotoxic, based on inhalation testing dogs with epinephrine: 1.0% vol.

i. specific target organ toxicity (STOT) – repeated exposure:

EXTINGUISHING AGENT (2-bromo-3,3,3-trifluoro-1-propene)

No available data

j. danger in case of aspiration:

No available data.

SECTION 12: Ecological information

12.1. Toxicity

LC50 (Oncorhynchus mykiss/rainbow trout) 96 h: 31,6 mg/L (nominal)

Erl50 (Pseudokirchneriella subcapitata/green alga) 96 h: >800 mg/L (nominal)

Ebl50 (Pseudokirchneriella subcapitata/green alga) 96 h: >800 mg/L (nominal)

EC50 (Daphnia magna/pulce d'acqua) 48h: 83,0 mg/L (nominal)

NOTE: The nominal concentrations are added to the amount of test samples. The material is volatile and disappears rapidly in the samples.

12.2. Persistence and degradability

EXTINGUISHING AGENT (2-bromo-3,3,3-trifluoro-1-propene)

Not readily biodegradable in water. It reacts rapidly with the OH radicals in the gas phase of the atmosphere and has a short atmospheric lifetime (7,0 days at latitudes from 30 ° N to 60 ° N). It expects a rapid shift in the atmosphere followed by decomposition.

12.3. Bioaccumulative potential

EXTINGUISHING AGENT (2-bromo-3,3,3-trifluoro-1-propene)

Given the chemical and physical characteristics of the substance, bioaccumulation is unlikely.

12.4. Mobility in soil

No available data

12.5. Results of PBT and vPvB assessment

No available data

12.6. Other adverse effects

The extinguishing agent content is a volatile organic compound and must not be mixed with the ground or with the drinking water.

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

The waste management measures shall be assessed case by case, depending on the quantity of extinguishing agent may be present in the cylinder and the residual pressure of the propellant gas, in the light of the provisions of European and/or national legislation in force.

For manipulation and measures in case of accidental extinguishing agent dispersion, generally apply the guidance provided in paragraphs 6 and 7.

Resorting to waste disposal after evaluating the possibilities for re-use or re-filling or recovery at authorized companies under current regulations.

It is not allowed for disposal by unauthorized parties from the local requirements.

SECTION 14: Transport information

14.1. UN number

UN 1044

14.2. UN proper shipping name

FIRE EXTINGUISHERS

14.3. Transport hazard class(es)

2.2

14.4. Packing group

N/A

14.5. Environmental hazards

ADR/RID/ADN: not applicable

IMO: not applicable

ICAO: not applicable

14.6. Special precautions for user

The transport of dangerous goods, including loading and unloading must be carried out by persons who have received the necessary training required by the modal regulations.

For the application of any exemptions to the transport of dangerous goods, refer to the appropriate modal regulations.

Exemption for road transport (ADR 2015): SP 594 - Fire extinguishers manufactured and filled according to the provisions applied in the country of manufacture, are not subject to the requirements of ADR:

- provided with protection against inadvertent discharge; and
- if they are contained in strong outer packagings or in the case of large fire extinguishers which meet the requirements of special packing provision PP91 of packing instruction P003 in 4.1.4.1.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

No available data

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SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

The fire extinguisher is a good classified as hazardous for transportation

Applicable modal regulations: ADR, ADN, RID, IMDG, ICAO.

15.2. Chemical safety assessment

N/A

SECTION 16: Other information

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Note: this MSDS is not to be considered as a MSDS compiled in accordance with the art. 31 of Regulation (CE) 1907/2006 since the product is defined as "article".

Previous MSDS version

Issue A: First publication

Issue B: Addition of emergency phone number

Issue C: Addition of Portuguese version

Issue D: Detailing fire classes

Issue E: update of company name and logo

Issue F: Removal of Portuguese version, addition of non-suitable media (chapter 5.1), addition of toxicity rating (chapters 2.1, 3.2, 11.1.g)

Abbreviations and acronyms

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

CAS [Number]: Chemical American Society [Number].

CLP: Regulation CE No. 1272/2008 on classification, labeling and packaging of substances and mixtures.

°C: degree centigrade.

DNEL: Derived No Effect Level.

EbI 50: Extended Biotic Index.

EC [Number]: also EINECS. European Inventory of Existing Commercial Chemical Substances [Number].

EC50: Half maximal effective concentration.

ErL50: Effect Range Low.



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Fire of class A: Fires that involve ordinary combustible materials such as wood, cloth, paper, rubber, and many plastics.

Fire of class B: Fires that involve flammable liquids, oils, petroleum greases, tars, oil-base paints, solvents, lacquers, alcohols, and flammable gases.

Fire of class C: Fires that involve energized electrical equipment where the electrical nonconductivity of the fire extinguishing agent as discharged is of importance.

Fire of class K: Fires that involve cooking appliances with flammable cooking oils and fats, vegetable or animal.

g/cm³: grams/cubecentimetre.

g/L: grams/litre.

h: hours.

ICAO: International Civil Aviation Organization.

IMO: International Maritime Organization.

LC50: Median lethal dose.

LOAEL: Lowest Observed Adverse Effect Level.

kPa: kilopascal.

mg/L: milligrams/litre.

N/A: not applicable.

NOAEL: No Observable Adverse Effect Level.

PBT: Persistent, Bioaccumulative, Toxic.

ppm: part per million.

REACH: Regulation CE n. 1907/2006 concerning Registration, Evaluation, Authorisation and Restriction of Chemicals.

RID: European Agreement concerning the International Carriage of Dangerous Goods by Railways.

SP: special provision.

STOT: Specific Target Organ Toxicity.

US EPA TSCA: Toxic Substances Control Act – US Environmental Protection Agency.

v/v, vol.: volume (concentration).

vPvB: Very persistent, very bioaccumulative.

H statements mentioned in the SDS

H280 Press. Gas – Contains gas under pressure: may explode if heated.

H335 STOT SE 3 (specific target organ toxicity, single exposure Category 3) – May cause respiratory irritation.

H336 STOT SE 3 (specific target organ toxicity, single exposure Category 3) – May cause drowsiness or dizziness.

H361 RT 2 (reproductive toxicity Category 2) – Suspected of damaging fertility or the unborn child

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